

From: [Roberts, Kris D.](#)
To: [Tricia Pfeiffer](#)
Cc: [Fewless, Dennis R.](#); [Glatt, Dave D.](#); [Semerad, Jim L.](#); [Dihle, Mark A.](#)
Subject: FW: purple
Date: 07/06/2012 01:17 PM
Importance: High
Attachments: [IMG_2723.JPG](#)

Tricia:

Interesting email and photo from Jacki.

Doing a little due diligence, I googled purple pigment and found an ancient Chinese reference to purple barium copper silicate. With a few more minutes, I found a Wikipedia list of inorganic pigments, which had purple pigment right at the top.

Google - purple pigment from copper silicate. First and second link.

Then I looked up the chemical analysis we did of Jacki's house well on October 21, 2010.

Unfortunately, the analysis group we picked for major ions and trace elements did not include silica, but generally silica runs between 10 and 20 ppm in ND groundwater.

In Jacki's house well analysis, there was 102 ppb copper, and 13 ppb barium.

I am a geologist, not a chemist. Particularly not a theoretical inorganic color chemist. So I don't know if those analytes could combine with precipitating iron and manganese under the proper conditions to produce the purple pigment Jacki sees. However, from the photo, it appears that the color is connected to particulate residue visible in the bottom of the sink in the photo. My color laser print of the photo also seems to show somewhat of a green cast in the residue below the purple stain line. That also could be an indication of copper. I also do not remember whether the water plumbing in Jacki's house was copper or plastic, so I won't speculate there.

A good question might be how old the well is (I don't remember), and what the screen construction and pump construction is. Older wells where either the casing, screen, or pump materials are breaking down do show interesting particulate residues from time to time as the material degradation continues.

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From: Jacki [mailto:jboid@dia.net]
Sent: Friday, July 06, 2012 12:37 PM
To: pfeiffer.Tricia@epamail.epa.gov
Cc: Roberts, Kris D.
Subject: purple

I just washed the morning dishes and when I drained the sink this ring of "purple" stains is around the entire sink and spots over the entire bottom of the sink?????? The water looks fairly clear, a blue tint to it, but not as black as it was a few days ago.

The message is ready to be sent with the following file or link attachments:

[IMG_2723.JPG](#)

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